**Stage 2**

**Understand the distribution and measures of center for US opioid mortality for 2019**

* Creating a histogram of Normalized Deaths variable for entire US as a distribution.

Graphical user interface, application, Teams

Description automatically generated

* Add a vertical line to the histogram representing the **mean** Normalized Opioid Death for US.
* The orange line denotes median of normalized deaths in entire US and green line denotes mean of normalized deaths in Figure below.

Graphical user interface, application

Description automatically generated with medium confidence

**Understand variable to mortality relationships for 2019 data**

* Using the pandas cut function to get quantile distribution and divide the data of norm deaths into labels as 1.999 to 8.0 as very low, range 8.0 to 11.0 as low, range 11.0 to 16.0 as High, range 16.0 to 64.0 as very high.

**Identified variables of stage 1 to plotting them as a second variable to Normalized Mortality in a scatter plot to observe any trends.**

1. **Scatter plot Norm deaths and County code**

**Chart, scatter chart

Description automatically generated**

1. **Scatter plot State and County code**

**Chart, scatter chart

Description automatically generated**

1. **Scatter plot Norm deaths and Population**

**Chart, scatter chart

Description automatically generated**

### Scatter plot Norm deaths and Opioid Dispensing rate

**Chart, scatter chart

Description automatically generated**

### 5. Scatter plot Norm deaths and Crude rate

**Chart, scatter chart

Description automatically generated**

### 6.Scatter plot Norm deaths and against Drug/Alcohol induced cause

### Chart Description automatically generated with low confidence

### 7. Scatter plot Norm deaths and against Premature death

**Chart, scatter chart

Description automatically generated**

**8. Scatter plot Norm deaths Ratio of population to primary care physicians**

**Chart, scatter chart

Description automatically generated**

**Inferences:**

- We can infer from the above graph the state NM(New Mexico) is having highest mortality in overall states.

- We can infer that for high crude rate the normalized death number is higher. For lower crude rate, the normalized death count is low.

- For Drug poisoning (overdose) unintentional the death factor is highest and drug poisoning(overdose)homicide is the lowest

- For Ratio of population to primary care are higher we can infer the normalized deaths are low.

**Extra Credit - Use variables dynamically in a dashboard using Plotly widget for jupyter**

* The variables dropdown we can select the different variable and accordingly the scatter plot is displayed.

**Chart, scatter chart

Description automatically generated**